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SELECTION OF TARGET BEHAVIORS AND INTERVENTIONS: A CASE OF NECESSARY BUT INSUFFICIENT CHOICES

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Essential steps toward solving a behavioral problem include selecting appropriate target behaviors and interventions. DeVries, Burnette, and Redmon (1991) selected a target behavior, glove wearing, and an intervention, performance feedback, to address one aspect of a critically important health care topic: the application of behavioral technology to increase the use of universal precautions by emergency room (ER) nurses. Their selections and results, however, have prompted three questions: Is the choice of glove wearing as the target behavior sufficient? Does performance feedback produce sufficient protective behavior? What has been learned from this application of old technology to a new problem?

Selecting Target Behaviors

Choosing an insufficient target behavior is a common problem in psychology (cf. Hawkins, 1986; Weist, Ollendick, & Finney, 1991), and the selection of glove wearing is an example of an insufficient target. *Universal precautions,* now mandated by the Occupational Safety and Health Administration (OSHA) regulations for hospital workers, include barriers (e.g., the appropriate use of gloves, gowns, protective eye wear, and masks or face shields during invasive procedures), sharps safety (e.g., the safe disposal of syringes, needles, scalpel blades and other sharps), and waste management (e.g., safe disposal of waste contaminated with blood or body fluids) (Gardner, 1991; Halloran, Hughes, & Mayer, 1988). Glove wearing is only one of many necessary behaviors that protect health-care workers from exposure to others' body fluids, and thereby prevent transmission of the human immunodeficiency virus (HIV) and hepatitis B virus. Thus, the social validity (Schwartz & Baer, 1991; Wolf, 1978) of increasing glove wearing alone is questionable.

The insufficiency of glove wearing as a target behavior is more remarkable when considering documented occupational exposures. Most exposures have involved the hands, with needle sticks the most common route of exposure for health-care workers (Gardner, 1991). Gloves will not prevent needle-stick exposures, and overuse of gloves may actually increase needle sticks by making needle handling more unwieldy (Gardner, 1991; Halloran et al., 1988). Thus, protection may be compromised by either underuse or overuse of universal precautions. This bimodal risk presents dilemmas for selecting targets and goals for prevention intervention. When should universal precautions be used? When do regulations and policies like universal precautions increase (rather than decrease) the risk of occupational injuries? Before the effectiveness of behavioral strategies to reduce occupational transmission of HIV and hepatitis B can be documented, researchers must carefully select the target behaviors and the levels of performance that are most likely to protect health-care workers.

Sufficiency of the Intervention

DeVries et al. (1991) used performance feedback to increase ER nurses' use of gloves because of its effectiveness with other occupational safety demonstrations (e.g., Sulzer-Azaroff & de Santamaria, 1980). Performance feedback often results in initial changes in behavior, changes that have been attributed to both antecedent and consequence functions (cf. Prue & Fairbank, 1981). However, continued change (i.e., improvement) is likely to

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require additional intervention components related to goal setting, praise, precise targeting, and other strategies. In the absence of these additional techniques, performance feedback is unlikely to result in sustained error-free performance. This was indeed the case with the DeVries et al. study. Their small group of nurses wore gloves on an average of 73% of observed targeted occasions. Additional behavior-change techniques may have further increased their use of gloves during ER procedures.

Lack of glove use, however, showed specific patterns. All 4 nurses did not wear gloves when giving injections, and 2 nurses inconsistently wore gloves when transporting specimens. Performance feedback, therefore, may have been sufficient to establish high rates of glove use in some situations for some nurses, but was insufficient to increase use of precautions in other situations for which nurses thought that gloves were unnecessary. Social validation of glove wearing in specific ER situations would provide additional data with which to evaluate the sufficiency of performance feedback. If glove wearing in some situations was unnecessary or contraindicated (e.g., when giving injections or transporting specimens), then performance feedback may have achieved an optimal outcome. If adherence to universal precautions was needed in all targeted situations, then performance feedback was insufficient.

Determining the level of behavior change needed is a difficult task. This complex question relates to base rates of patients with HIV and hepatitis B, the likelihood that exposure will result in transmission, worker characteristics related to susceptibility (e.g., whether the nurses had received the hepatitis B vaccination), and other epidemiological issues (Winett, Moore, & Anderson, 1991). Experts in the epidemiology of viral transmission should evaluate the social validity of the improvements in nurses' use of universal precautions. With a small sample of subjects, one hopes that the intervention will show robust results, because one might expect the intervention to be less effective when implemented with other nurses in other ERs. Further documentation that increases in the use of universal precautions will be effective in preventing transmission will, like other injury prevention efforts (Scheidt, 1988), require large samples from multiple settings over long periods of time. The current results are therefore limited in terms of public health outcome criteria.

Applying an Old Technology to a New Problem

Much has been written about the limitations of studies that essentially demonstrate only that an old technique can be applied successfully to change a new target behavior (e.g., Dietz, 1978; Michael, 1980; but see Baer, 1981, for a different view). This limitation seems relevant for the application of performance feedback to increase glove wearing by ER nurses. Few may doubt that the technique will work to increase a given target behavior. Nevertheless, DeVries et al. (1991) have demonstrated that nurses working in a busy ER respond to performance feedback by wearing gloves more often.

Do these results warrant attention as a contribution to AIDS prevention? This question remains unanswered. Without knowing the social validity of the behavior change from an epidemiological perspective on viral transmission, we are unable to assert that glove wearing in several situations and settings, but not in others, will provide sufficient protection from viral transmission. We also do not know about ER nurses' satisfaction with current universal precaution policies or their evaluation of performance feedback as a worksite intervention.

We do know, however, that the authors have documented another of the many uses of performance feedback. The study provides data that show the limited effectiveness of performance feedback for increasing the use of gloves in an ER, one of several necessary components of the universal precautions now mandated by OSHA in an attempt to reduce viral transmissions to health-care workers. The lack of inclusion of other components of universal precautions (e.g., sharps safety, other barriers, waste disposal) as target behaviors provides a clear direction for future studies targeting the protection of health-care workers from occupational viral transmission.

Judgments about the scientific merit and social

importance of a research article require careful analysis of a study's conceptual contributions, methodology, results, and implications. Reviewers rely on their scientific expertise to make decisions about the sufficiency of methodology. They rely on their professional knowledge and opinions for judgments about the importance of a study and its findings, and these judgments are frequently facilitated by social validity assessments (Schwartz & Baer, 1991; Wolf, 1978). The study by Devries et al. (1991) would not have raised these three questions if the authors had placed their results in context with social validity assessments from relevant experts and consumers, and if they had noted the limitations of targeting only glove wearing and using performance feedback. The study by DeVries et al. represents a case of an investigation guided by the selection of necessary but insufficient target behaviors and interventions.

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